CLAIMS:

1. A communication network control method for a synchronous communication network including a hub and a plurality of user nodes each at a different distance from the hub, said method comprising steps of:

transmitting a first frame from the hub to each user node, the first frame including a first control information;

transmitting a first respective data burst in a first frame time period from each of the user nodes to the hub according to the first control information, a start of the first frame time period from each of the user nodes occurs at the hub simultaneously;

transmitting a second frame from the hub to each user node immediately following the first frame, the second frame including a second control information; and

transmitting a second respective data burst in a second frame time period from each of the user nodes to the hub according to the second control information, a start of the second frame time period from each of the user nodes occurs at the hub simultaneously,

wherein the second respective data burst in the second frame time period is received at the hub immediately following the first respective data burst in the first frame time period.

2. The method of claim 1, wherein the first control information includes a first burst time plan and the second control information includes a second burst time plan, the first burst time plan allocating at least one slot in the first respective data burst in a first frame time period to at least one of the user nodes, and the second burst time plan

allocating at least one slot in the second respective data burst in a second frame time period to at least one of the user nodes.

3. The method of claim 2, further comprising steps of:

queuing a plurality of user data segments;

adding a demand field to each user data segment; and

scheduling the plurality of user data segments according to the first burst time plan.

4. The method of claim 3, wherein the step of queuing the plurality of user data segments comprises steps of:

classifying user data packets according to a predetermined quality of service;

segmenting the user data packets into payload sized segments; and

sorting the segments by the predetermined quality of service into a plurality of quality of service queues.

5. The method of claim 3, wherein the step of adding the demand field to each user data segment comprises steps of:

calculating the demand field from a current total demand, a percent real time demand, and a committed information rate trigger flag; and

attaching the demand field to each user data segment.

6. The method of claim 3, wherein the step of scheduling the plurality of user data segments based on the first burst time plan comprises steps of:

selecting one of the plurality of quality of service queues according to a queuing algorithm;

moving a user data segment from the selected quality of service queue to a transmit queue; and

setting a size of a transmit queue for each user node based on a number of slots in the first frame time period allocated to the user node.

7. The method of claim 6, wherein the step of transmitting the first respective data burst in the first frame time period from each of the user nodes to the hub further comprises a step of:

transmitting the user data segments in a position of each slot in the first frame time period allocated to the respective user node.

8. The method of claim 6, further comprising a step of:

determining a burst time plan failsafe state,

wherein the number of slots and the position of each slot in the first frame time period is allocated by the first burst time plan upon determining that the burst time plan failsafe state is an armed state,

wherein the number of slots and the position of each slot in the first frame time period is allocated by a previous burst time plan upon determining that the burst time plan failsafe state is an unarmed state.

9. The method of claim 8, wherein determining the burst time plan failsafe state further comprises:

setting the burst time plan failsafe state to the armed state upon updating a burst time plan memory after receiving a start of the first frame from the hub at the user node; and

setting the burst time plan failsafe state to the unarmed state upon receiving a start of the second frame from the hub at the user node before updating the burst time plan memory.

10. The method of claim 3, further comprising:

transmitting at least one of an upstream symbol timing adjustment, an upstream frequency adjustment, and an upstream power adjustment from the hub to each user node; and

transmitting a third respective data burst in a third frame time period from each of the user nodes to the hub according to the upstream timing adjustment, the upstream frequency adjustment, and the upstream power adjustment,

wherein the control information includes an upstream modulation order and a forward error correction order for at least one of the user nodes.

11. The method of claim 10, further comprising:

calculating a channel assessment field from a channel symbol offset, a channel frequency offset, and a channel signal to noise ratio; and

attaching the channel assessment field to each user data segment.

12. The method of claim 11, further comprising:

stripping the channel assessment field from each user data segment;

storing each channel assessment field in an assessment data structure; and

generating the upstream modulation order and a forward error correction order based on the assessment data structure and predetermined rules.

13. A wireless communication network comprising:

a hub; and

a plurality of user nodes configured to communicate via a satellite with said hub,

said hub including

a processor configured to form a first frame,

a transmitter configured to transmit to each user node, the first frame including a first control information,

a receiver configured to receive a first respective data burst in a first frame time period from each of the user nodes according to the first control information, a start of the first frame time period from each of the user nodes occurring at the receiver simultaneously, wherein

said processor is configured to form a second frame and said transmitter is configured to transmit the second frame to each user node immediately following the first frame, the second frame including a second control information,

said receiver being configured to receive a second respective data burst in a second frame time period from each of the user nodes according to the second control information, a start of the second frame time period from each of the user nodes occurring at the hub simultaneously,

the second respective data burst in the second frame time period being received at the receiver immediately following the first respective data burst in the first frame time period.

14. The wireless communication network of claim 13, wherein the first control information includes a first burst time plan and the second control information includes a second burst time plan, the first burst time plan allocating at least one slot in the first respective data burst in a first frame time period to at least one of the user nodes, and the second burst time plan allocating at least one slot in the second respective data burst in a second frame time period to at least one of the user nodes.

15. The wireless communication network of claim 14, wherein:

each user node is configured to

queue a plurality of user data segments,

add a demand field to each user data segment, and

schedule the plurality of data segments according to the first burst time plan.

16. The wireless communication network of claim 15, wherein:

each user node is further configured to

classify user data packets according to a predetermined quality of service,

segment the user data packets into payload sized segments, and

sort the segments by the predetermined quality of service into a plurality of quality of service queues.

17. The wireless communication network of claim 15, wherein:

each user node is further configured to

calculate the demand field from a current total demand, a percent real time demand, and a committed information rate trigger flag, and

attach the demand field to each user data segment.

18. The wireless communication network of claim 15, wherein:

each user node is further configured to

select one of the plurality of quality of service queues according to a queuing algorithm,

move a user data segment from the selected quality of service queue to a transmit queue, and

set a size of a transmit queue for each user node to be proportional to a number of slots in the first frame time period allocated to the user node.

19. The wireless communication network of claim 18, wherein:

the processor is further configured to

determine a burst time plan failsafe state, and

schedule the plurality of user data segments according to the first burst time plan, wherein

the number of slots and the position of each slot in the first frame time period is allocated by the first burst time plan upon determining that the burst time plan failsafe state is an armed state,

the number of slots and the position of each slot in the first frame time period is allocated by a previous burst time plan upon determining that the burst time plan failsafe state is an unarmed state.

20. The wireless communication network of claim 14, wherein:

said transmitter is further configured to

transmit at least one of an upstream symbol timing adjustment, an upstream frequency adjustment, and an upstream power adjustment from the hub to each user node, and

transmit a third respective data burst in a third frame time period from each of the user nodes to the hub according to the upstream timing adjustment, the upstream frequency adjustment, and the upstream power adjustment,

wherein the control information includes an upstream modulation order and a forward error correction order for at least one of the user nodes.

21. The wireless communication network of claim 15, wherein:

said receiver is further configured to

calculate the channel assessment field from a channel symbol offset, a channel frequency offset, and a channel signal to noise ratio; and

attach the channel assessment field to each user data segment.

22. The wireless communication network of claim 21, wherein:

the processor is configured to

strip the channel assessment field from each user data segment,

store each channel assessment field in an assessment data structure, and

generate the upstream modulation order and a forward error correction order based on the assessment data structure and predetermined rules.

23. A hub for a wireless communication network, said wireless communications network including the hub, a plurality of user nodes and a satellite, comprising:

a processor configured to form a first frame;

a transmitter configured to transmit to each user node, the first frame including a first control information;

a receiver configured to receive a first respective data burst in a first frame time period from each of the user nodes according to the first control information, a start of the first frame time period from each of the user nodes occurring at the receiver simultaneously, wherein

said processor is configured to form a second frame and said transmitter is configured to transmit the second frame to each user node immediately following the first frame, the second frame including a second control information,

said receiver being configured to receive a second respective data burst in a second frame time period from each of the user nodes according to the second control information, a start of the second frame time period from each of the user nodes occurring at the hub simultaneously, and

the second respective data burst in the second frame time period being received at the receiver immediately following the first respective data burst in the first frame time period.

24. The hub of claim 23, wherein:

the first control information includes a first burst time plan and the second control information includes a second burst time plan, the first burst time plan allocating at least one slot in the first respective data burst in a first frame time period

to at least one of the user nodes, and the second burst time plan allocating at least one slot in the second respective data burst in a second frame time period to at least one of the user nodes.

25. The hub of claim 24, wherein:

said transmitter is further configured to

transmit at least one of an upstream symbol timing adjustment, an upstream frequency adjustment, and an upstream power adjustment from the hub to each user node, and

transmit a third respective data burst in a third frame time period from each of the user nodes to the hub according to the upstream timing adjustment, the upstream frequency adjustment, and the upstream power adjustment,

wherein the control information includes an upstream modulation order and a forward error correction order for at least one of the user nodes.

26. The hub of claim 25, wherein:

said receiver is further configured to

calculate the channel assessment field from a channel symbol offset, a channel frequency offset, and a channel signal to noise ratio; and

attach the channel assessment field to each segment.

27. The hub of claim 26, wherein:

the processor is configured to

strip the channel assessment field from each user data segment,

store each channel assessment field in an assessment data structure, and

generate the upstream modulation order and a forward error correction order based on the assessment data structure and predetermined rules.

28. A wireless communication network comprising:

a hub; and

a plurality of user nodes configured to communicate via a satellite with said hub,

said hub including

means for forming a first frame,

means for transmitting to each user node, the first frame including a first control information,

means for receiving a first respective data burst in a first frame time period from each of the user nodes according to the first control information, a start of the first frame time period from each of the user nodes occurs simultaneously at the means for receiving,

means for forming a second frame,

said means for transmitting includes means for transmitting the second frame to each user node immediately following the first frame, the second frame including a second control information,

said means for receiving including means for receiving a second respective data burst in a second frame time period from each of the user nodes according to the second control information, a start of the second frame time period from each of the user nodes occurs at the hub simultaneously,

the second respective data burst in the second frame time period being received at the means for receiving immediately following the first respective data burst in the first frame time period.

29. A hub for a wireless communication network, said wireless communications network including the hub, a plurality of user nodes and a satellite, comprising:

means for forming a first frame;

means for transmitting to each user node, the first frame including a first control information;

means for receiving a first respective data burst in a first frame time period from each of the user nodes according to the first control information, a start of the first frame time period from each of the user nodes occurs simultaneously at the means for receiving; and

means for forming a second frame, wherein

said means for transmitting includes means for transmitting the second frame to each user node immediately following the first frame, the second frame including a second control information,

said means for receiving including means for receiving a second respective data burst in a second frame time period from each of the user nodes according to the second control information, a start of the second frame time period from each of the user nodes occurs simultaneously at the hub, and

the second respective data burst in the second frame time period being received at the receiver immediately following the first respective data burst in the first frame time period.